Proposed Brosnan Forest Restoration Project
Coldwater Branch Stream Mitigation Bank

Sponsor Information:
Norfolk Southern Railway Company - Brosnan Forest

Point of Contact:
Project Manager: Monica Folk
Wild Folk, LLC
1475 Regal Court
Kissimmee, FL 34744
monicafolk@embarqmail.com
(office) 407-870-8603
(cell) 407-873-7274

Landowner Information:
Norfolk Southern Railway Company
Brosnan Forest
125 Brosnan Forest Road
Dorchester, South Carolina 29437
Facilities Manager: Josh Raglin, Joshua.raglin@nscorp.com

Project Location:
Stream reach stretching from 33.121060° -80.450143° to 33.157517° -80.403734°

Maps:
Figure 1 is a project location map
Figure 2 is a map of topography of the project on Brosnan Forest
Figure 3 is a map of the project watershed
Figure 4 is a map of the surrounding drainage basins
Figure 5 is a map of the NWI wetlands on the existing bank site
Figure 6 is a 1938 aerial of the project
Figure 7 is a 1994 aerial of the project
Figure 8 is a 2016 aerial of the project
Figure 9 is a map of wetland impairments in the region
Figure 10 is a general mitigation work plan map

Project Purpose and Mitigation Plan: We propose to expand the restoration of the large pocosin wetland established as the Brosnan Forest Mitigation Bank (BFMB) to the historical discharge creek known locally as Coldwater Branch (Figure 1). Effectively it is a large ditch extending about 4 miles northeast from the east side of the pocosin, eventually crossing under US Highway 78 and leaving Brosnan Forest property about 1 mile north of the road (Figure 2). The stream joins the last major tributary of the Four Hole Swamp drainage (Figure 4) in its southern (lower) end, and we propose to use the Four Hole Swamp basin (8-digit HUC 3050205) as the service area for this stream bank (Figure 3). Some residual wetland pockets

occur in the old stream channel, mainly close to the posocin (Figure 5), but there is little to no natural function in the ditch channel. The 1938 aerial photo of the site (Figure 6) shows the stream system in a fairly intact state, meandering through the pine uplands as a broad shallow mostly herbaceous swale until it hits the deeper section just below the railway, where it transitions to a forested hardwood swamp. By 1994 (Figure 7), it has been channelized for several decades and little of the stream system is visible. The middle reach (below the railway) has been impounded to create two permanent ponds that are managed by flashboard risers and a spillway on the north end. The lower reach, though deep and wide, receives a fraction of the water it historically moved and has become severely encroached. In 2016 (Figure 8), the stream system is primarily a ditch with a pond in the middle and a dry bottomland section north of the road. Brosnan Forest surrounds the proposed project entirely, with a conservation easement already in place held by Lowcountry Open Land Trust. Current land use is primarily recreation (hunting, fishing, buggy tours), food plots, sustainable timber harvest from natural longleaf pine uplands, some loblolly plantation areas. Uplands are burned regularly and the site supports numerous wildlife species, including a regionally important red-cockaded woodpecker research population.

Four Hole Swamp watershed is impaired for water quality (every sampling year since 2008) just below the confluence with the Coldwater Branch tributary (Figure 9). The swamp above this point has been flagged for mercury advisories, and flows have been reported to be low and inconsistent in recent years (Orangeburg Co. pers. commun). The Indian Field Swamp basin to the west of the pocosin bank has established TMDL values. Restoration of the pocosin and the creek system should contribute to the improvement of all of these impairments by delivering more consistent and regular freshwater flows, discharged by the pocosin wetland and surrounding uplands during natural rain events, but slowed and filtered by the repaired topography.

An experienced stream restoration engineering team will design the restoration plan. We expect to divide the project into three phases (or reaches), based on the natural physiognomy of the stream. The upper reach (Figure 10) is the first 1.5 miles of the stream after it exits the wetland bank. We designed an outlet for the wetland to drain into the existing ditch when the pocosin water levels exceed 103.5'. This will be the beginning point of the restored creek section, which will likely be a single-thread, slightly entrenched, moderately wide, low sinuosity creek with shallow slopes and light streambed material. It will replace the existing deep steep embanked ditch, though we will seek the natural creek pathway where possible and relocate the channel as needed. The lateral ditch systems will be re-contoured from the restored main channel upslope to the highest point of the adjacent uplands, reconfiguring the existing road system with culverts and low-water-crossings as needed. This will likely be extensive in the portions closest to the wetland.

At a point just north of the large powerline right-of-way, the stream changes character and becomes much steeper sloped, entrenched, more sinuous, with a wide forested floodplain (Figure 8). It maintains that character until it reaches the spillway just below the highway/ railway, so we will treat that 1.5-mile section as the second reach (Figure 10). Embedded within this stretch are the two impounded ponds, which will be removed as part of the design. The final reach is the 1-mile section north of the highway. It consists of a large wide heavily encroached bottomland forest with a less-distinct channel, though that may be an artifact of the limited flow from the impoundments above. This stretch will be studied carefully before a final plan is made. For the last 0.4-mile portion of the creek, the sponsor controls only the left bank (property line runs with the creek channel).

Photographs: In lieu of photos of the stream system, we propose to show it to the IRT during the May 2017 site visit of the wetland mitigation bank to inspect final construction of that project.

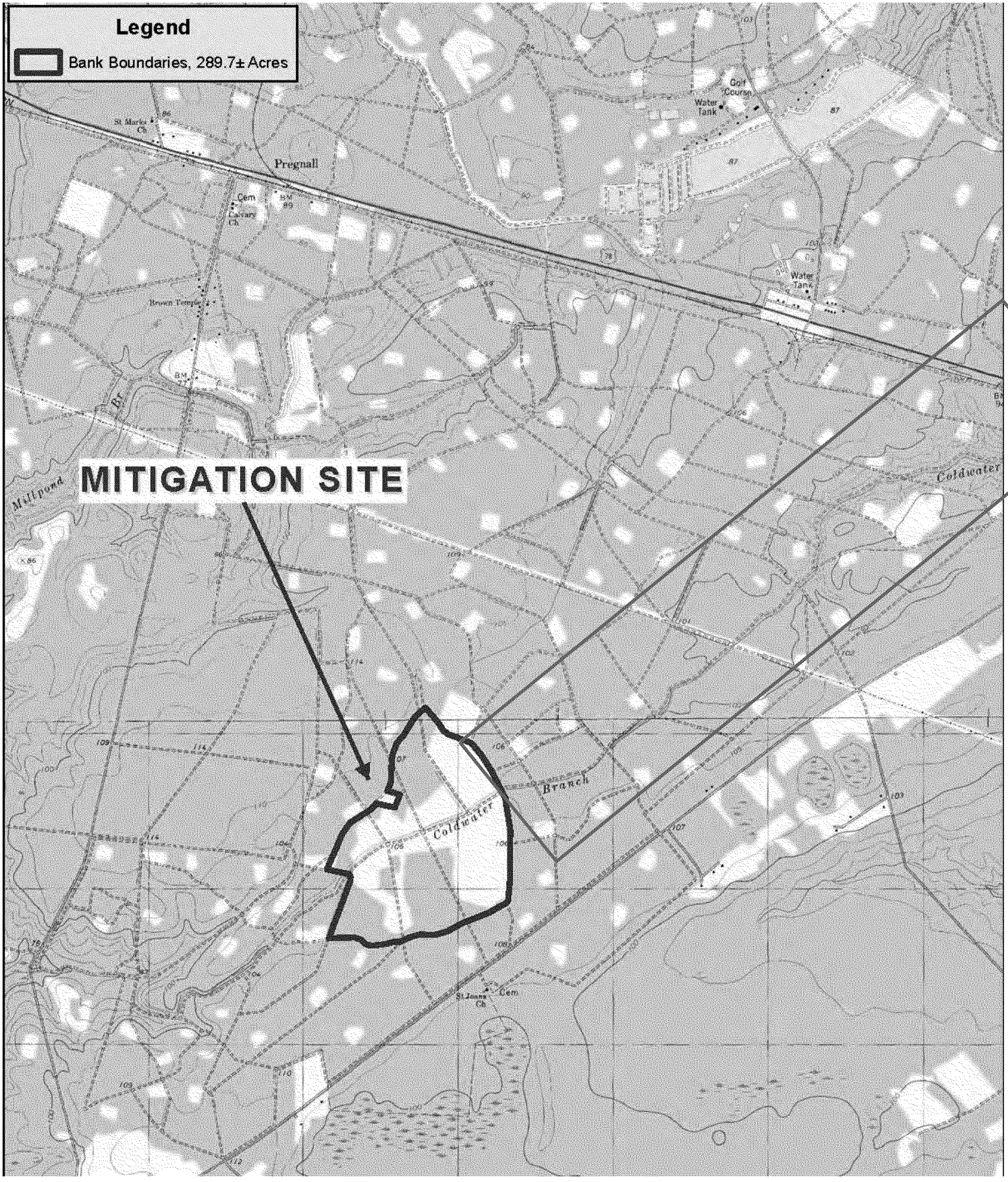


Figure 1. Location of existing Brosnan Forest Mitigation Bank and proposed stream restoration project (blue box).

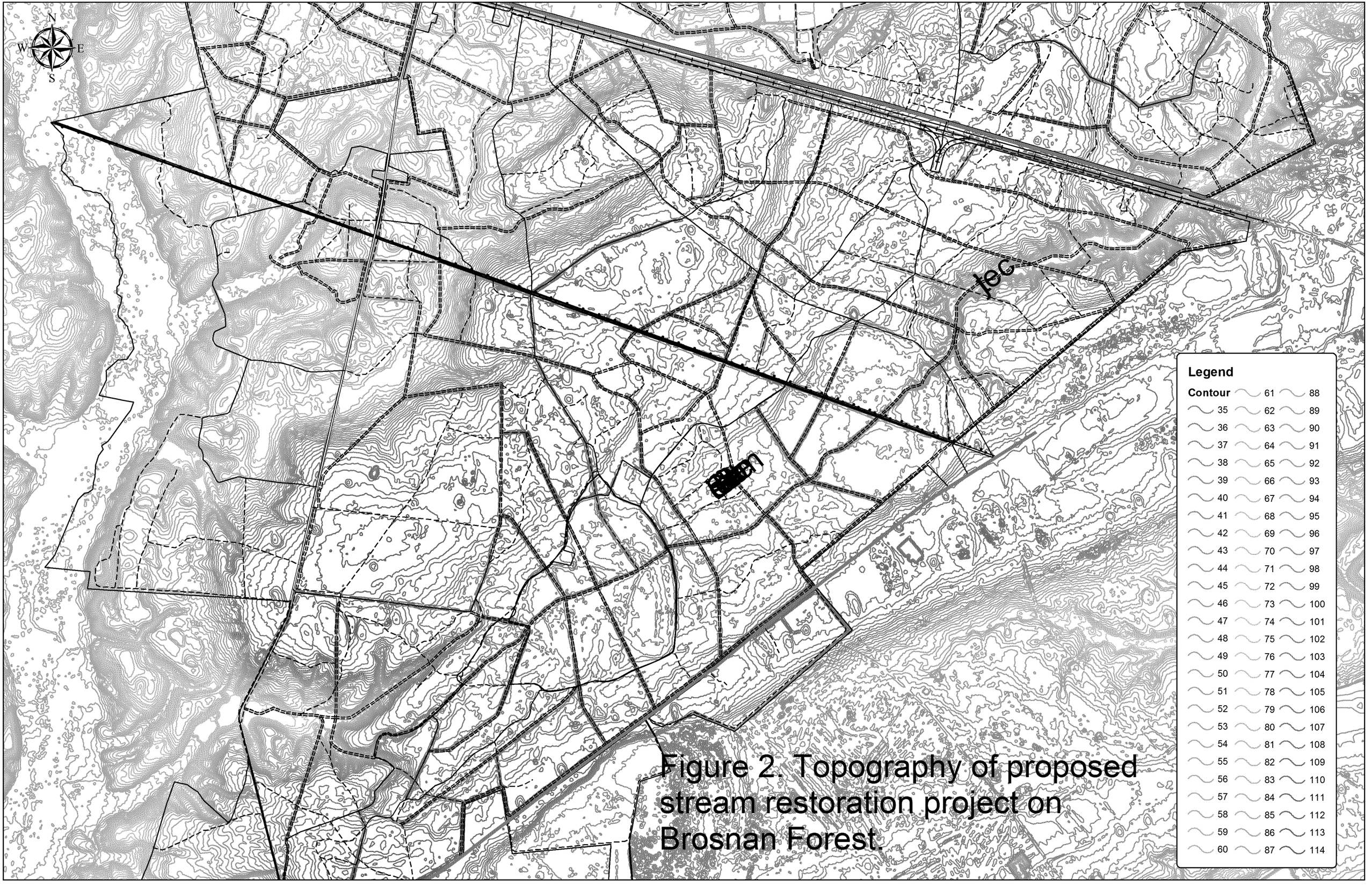


Figure 2. Topography of proposed stream restoration project on Brosnan Forest.

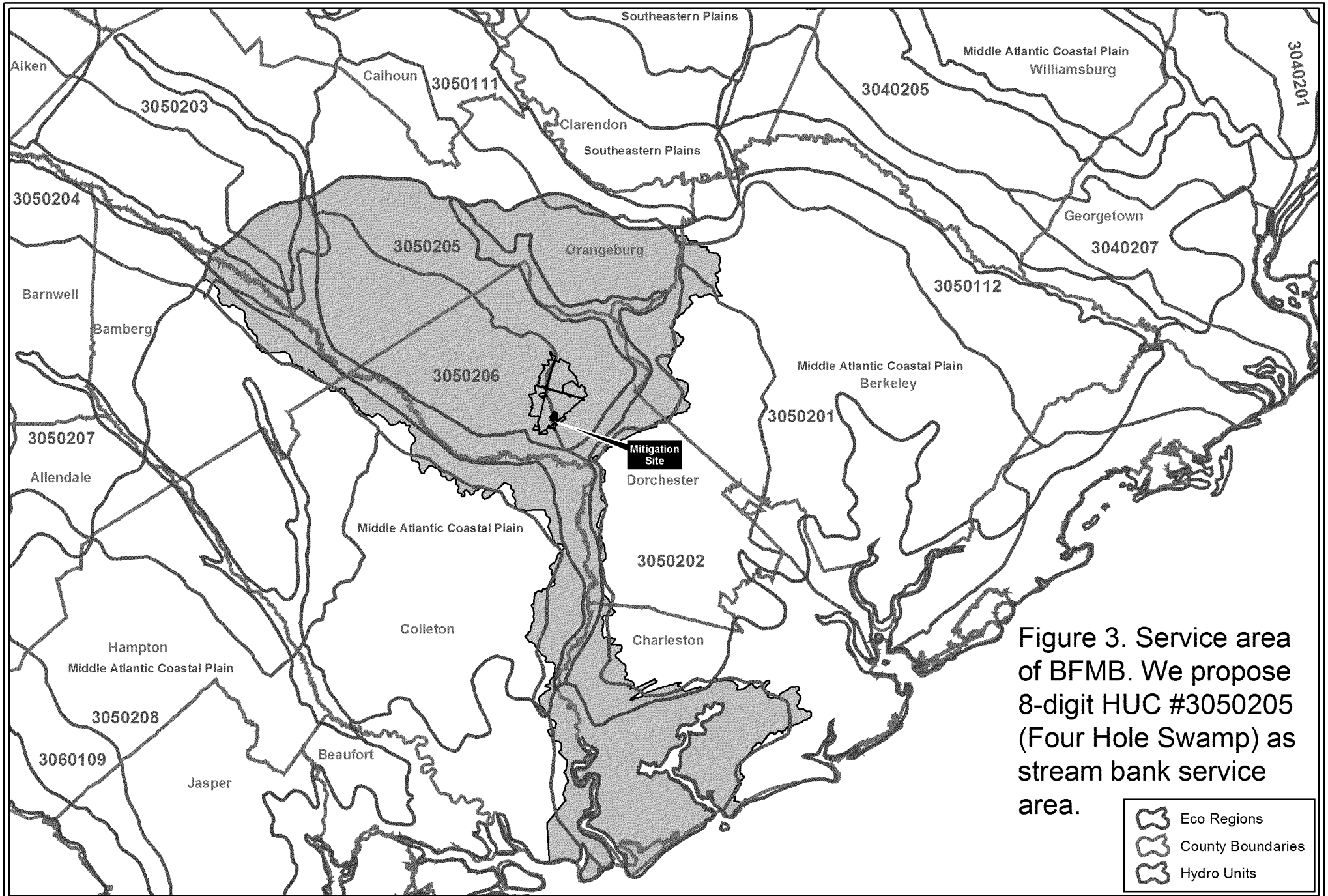


Figure 3. Service area of BFMB. We propose 8-digit HUC #3050205 (Four Hole Swamp) as stream bank service area.

MILLIKEN FORESTRY
WWW.MILLIKENFORESTRY.COM

N
W E
S

Mitigation Site
Brosnan Forest Boundary
Proposed Primary Service Area

3

0 12
Miles

Proposed Wetland Mitigation Bank
Service Area
Brosnan Forest
Norfolk Southern Corporation
Dorchester County, SC
February 2014

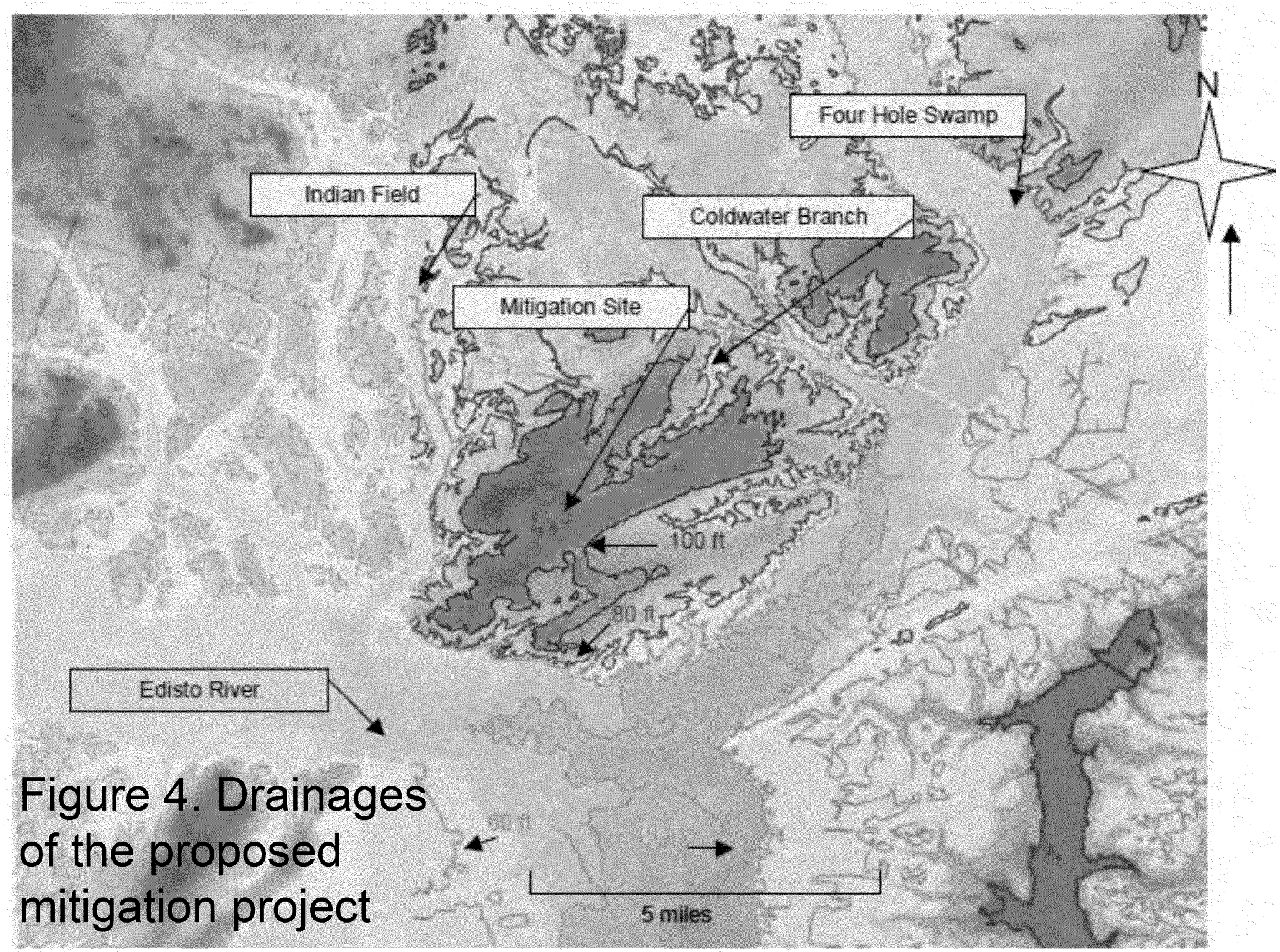


Figure 4. Drainages of the proposed mitigation project

Figure 5. NWI wetlands in the existing bank vicinity

MILLIKEN FORESTRY
WWW.MILLIKENFORESTRY.COM

N
W E
S

12

0 660
Feet

Wetland Mitigation Bank
Wetlands Map
2013 Aerial Photography
Brosnan Forest
Norfolk Southern Corporation
Dorchester County, SC
July 2014

Figure 6. 1938 aerial of the proposed stream restoration project

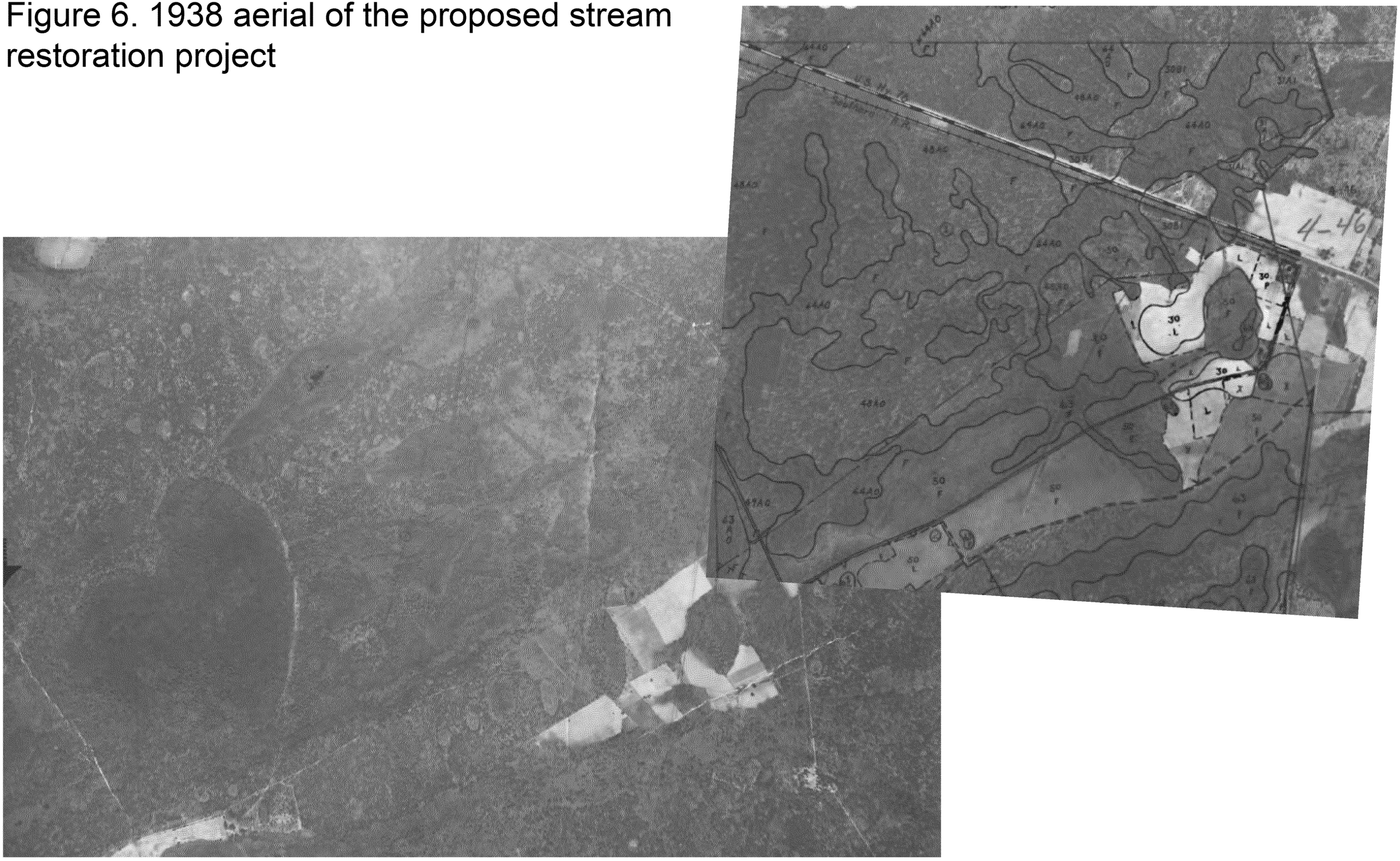
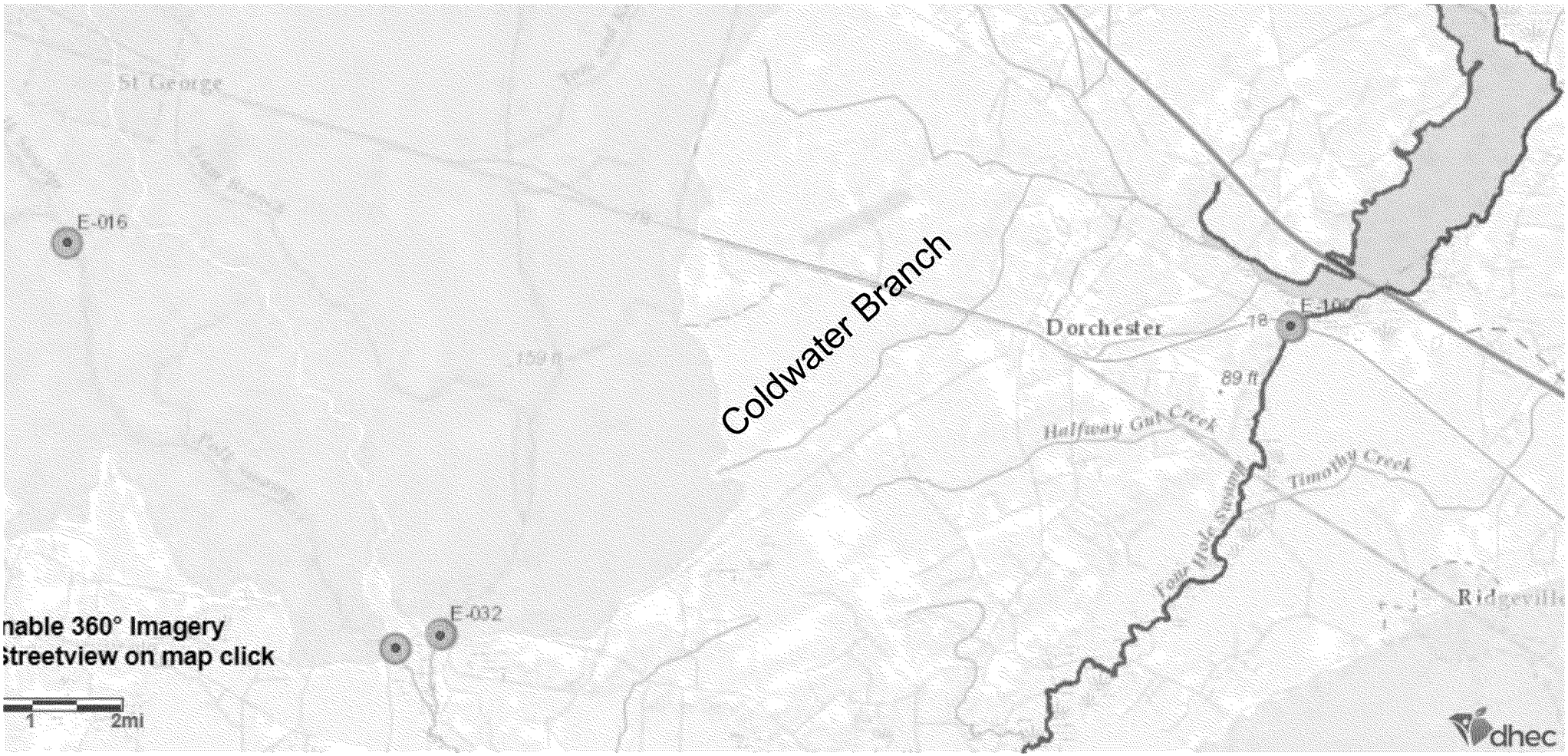


Figure 7. 1994 aerial of the proposed stream restoration project

Figure 8. 2016 aerial of the proposed stream restoration project

Figure 9. Water Quality Issues in Vicinity of Proposed Stream Project



Bulls-eye dots are 303(d) Impaired 2008-2014

Purple shading is approved TMDL watershed

Red shading is Mercury Advisory

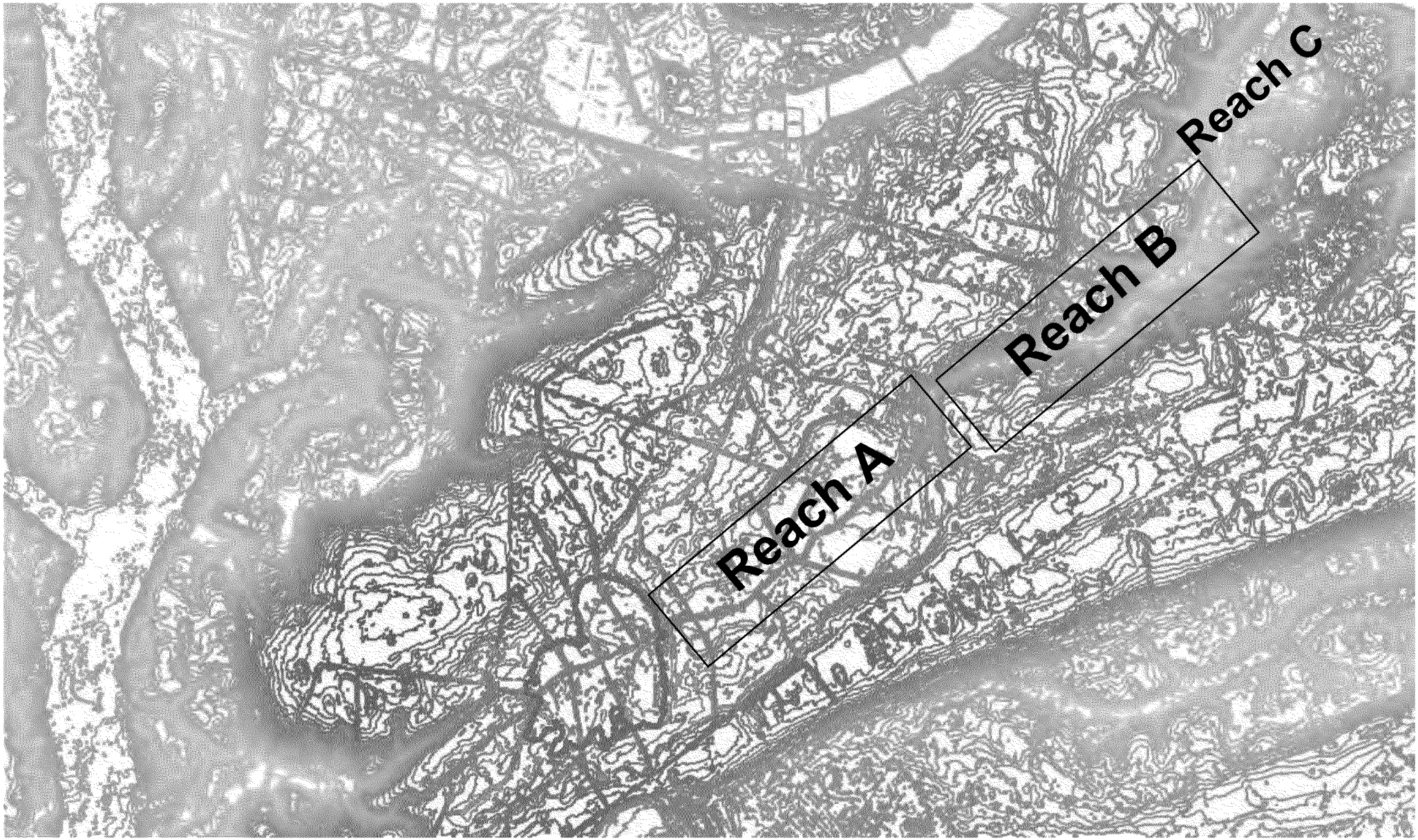


Figure 10. General restoration work plan for proposed stream mitigation project.
Reach A - Main stream channel and slopes will be re-created, lateral drainages will be restored, 200-foot buffers along all will be preserved in natural forest cover
Reach B – Impoundment dams (2) will be removed, channel and slopes will be re-created, 300-foot buffers will be preserved in natural forest cover
Reach C - Bottomland swamp will be rehydrated, channel restored, encroachment controlled.